CLAIMS:

1. An isolated, recombinant or synthetic DNA molecule encoding a mammalian GPI-anchored small leucine-rich proteoglycan.

5

- 2. The DNA molecule of claim 1 which is expressed in tissues including the kidney and the retina.
- 3. The DNA molecule of claim 1 wherein said DNA is cDNA.

10

4. The DNA molecule of claim 1 wherein said DNA is human DNA.

5. The DNA molecule of claim 1 wherein said DNA is murine DNA.

The state of the s

6. The DNA molecule of claim 1 wherein said DNA encodes nyctalopin; an amino acid sequence which is at least 50% homologous to nyctalopin; the amino acid sequence of SEQ ID NO:2; or an amino acid sequence which is at least 50% homologous to SEQ ID NO:2.

20

- 7. The DNA molecule of claim 6 wherein said DNA encodes the amino acid sequence SEQ ID NO:2 with conservative amino acid substitutions.
- 8. The DNA molecule of claim 1 wherein said DNA has the nucleotide sequence corresponding to SEQ ID NO:1.

25

9. An isolated, recombinant or synthetic DNA molecule or polynucleotide comprising a nucleotide sequence substantially homologous to SEQ ID NO:1 or a nucleotide sequence that hybridizes under stringent conditions to a hybridization probe having a nucleotide sequence of SEQ ID NO:1 or the complement of SEQ ID NO:1.

25

- 10. The polynucleotide of claim 9 wherein said polynucleotide is selected from the group comprising:
 - (e) RNA;
 - (f) cDNA;
 - (g) genomic DNA; and
 - (h) synthetic nucleic acids.
- 11. An expression vector comprising one of the DNAs of claims 1-10.
- 10 12. A cultured cell comprising the expression vector of claim 11.
 - 13. A cultured cell comprising the DNA sequence of one of claims 1 to 10, operably linked to an expression control sequence.
 - 14. A cultured cell transfected with the vector of claim 11, or a progeny of said cell, wherein the cell expresses a mammalian GPI-anchored small leucine-rich proteoglycan.
 - 15. A method of producing a proteoglycan, comprising culturing the cell of claim 12, 13 or 14 under conditions permitting the expression of the proteoglycan.
 - 16. The method of claim 15 further comprising the step of purifying the proteoglycan from the cell or the medium of the cell.
 - 17. A purified polypeptide having an amino acid sequence comprising one of:
 - (a) SEQ ID NO:2;
 - (b) SEQ ID NO:2 having at least one conservative amino acid substitution; or
 - (c) an amino acid sequence which is at least 50% homologous to SEQ ID NO:2.
- 18. A purified mammalian GPI-anchored small leucine-rich proteoglycan which is expressed in tissues including the kidney and the retina.

25

- 19. An antibody that specifically binds to an epitope of any one of the polypeptides of claims 17 or 18.
- 5 20. The antibody according to claim 19 wherein the antibody is a monoclonal antibody.
 - 21. A hybridoma secreting the monoclonal antibody of claim 20.
- A method of detecting or characterizing in a biological sample any one of the DNAs of claims 1 to 10, or the polynucleotides of claims 9 or 10, wherein said method comprises a step selected from the group consisting of:
 - (a) direct DNA sequencing;
 - (b) analysis of restriction length polymorphism;
 - (c) single-stranded conformation analysis;
 - (d) RNAse protection;
 - (e) the use of proteins that recognize nucleotide mismatches, such as the E. coli mutS protein;
 - (f) single nucleotide extension assays;
 - (g) microchip technology analysis;
 - (h) Northern blot analysis;
 - (i) Southern blot analysis;
 - (j) dot blot analysis;
 - (k) PCR analysis;
 - (l) fluorescent in situ hybridization analysis; and
 - (m) two-step label amplification analysis.
 - 23. A diagnostic kit for detecting or characterizing in a biological sample any one of the DNA molecules of claims 1 to 10 or the polynucleotides of claims 9 or 10, wherein:
 - (a) a means is provided to detect or characterize in a biological sample any one of the DNAs of claims 1 to 10, or the polynucleotides of claims 9 or 10; and

- (b) said means is selected from the methods of claim 22.
- 24. A method of screening molecules which affects expression or production of nyctalopin wherein said method comprises the step of exposing primary or *NYX* transfected cells to a drug candidate and determining the level of transcription or translation of *NYX* gene products.